

May 31, 2006



To: Mr. Noah C. Hawk, Art Unit: 3637
From: Michael A. Zerillo, Inventor
Subject: Patent Application Number 10/737,330

Currently Amended Claim – 12 sheets.

CLAIMS

I Claim:

1. (Currently Amended) An electric device configured to drive a patio umbrella canopy opening and closing means, the device adaptable as a means to open and close the umbrella canopy, the device comprising: a reversible electric motor and gear means driving a cable reel affixed in a motor housing; the motor housing having means to detachably attach to the umbrella support structure using a plurality of screws; a length of cable having means to detachably attach one end to the cable reel and means to detachably attach the opposite end to the canopy opening and closing means; a means to provide electricity; a control housing having means to detachably attach to a portion of the umbrella support structure using a plurality of screws; the control housing comprises a motor controller having means to receive the electricity; the motor controller comprises a manual switch means and a remote controllable switch means to selectively connect and disconnect the electricity to the motor for controlling motor start and stop and direction of rotation for driving the cable reel to collect and dispense the cable to lift and lower and stop the canopy opening and closing means and cause the canopy to open and close and stop; a transmitter having means to control the remote controllable switch and remotely activate the device to selectively open and close and stop the canopy; the device having said motor housing and control housing and cable with detachably means for removal from a first patio umbrella and to detachably attach to a subsequent patio umbrella.

1. (Previously Presented) An install it yourself electric opening and closing device that adapts with little or no modification to new and existing patio umbrellas of a type that operates by manually lifting and lowering a canopy opening and closing means on a support mast, the device comprising:

a housing means that an average person can easily install to the support mast outer surface by means of a plurality of screws and located above the canopy opening and closing means;

a reversible electric motor and gear means driving a cable reel and mounted to the housing;

a length of cable having means to fix one end to the cable reel and means to fix the opposite end to the canopy opening and closing means;

a means to provide electricity;

a motor control having means to receive the electricity and a manual switch means and a remote control switch means that connect and disconnect the electricity to the motor and control the motor start and stop and direction of rotation and drive the cable reel to collect and dispense the cable to lift and lower and stop the canopy opening and closing means;

a transmitter having means to control the remote control switch.

2. (Canceled) An install it yourself electric opening and closing device that adapts with little or no modification to new and existing patio umbrellas of a type that operates by rope and pulley that lifts and lowers a canopy opening and closing means on a support mast, the device comprising:

a housing means that an average person can easily install to the support mast outer surface by means of a plurality of screws and located above the canopy opening and closing means;

a reversible electric motor and gear means driving a cable reel and mounted to the housing;

a length of cable having means to fix one end to the cable reel and means to fix the opposite end to the canopy opening and closing means;

a means to provide electricity;

a motor control having means to receive the electricity and a manual switch means and a remote control switch means that connect and disconnect the electricity to the motor and control the motor start and stop and direction of rotation and drive the cable reel to collect and dispense the cable to lift and lower and stop the canopy opening and closing means;

a transmitter having means to control the remote control switch;

3. (Canceled) An install-it-yourself electric opening and closing device that adapts with little or no modification to new and existing patio umbrellas of a type that operates by a hand-controlled winch and cable that lifts and lowers a canopy opening and closing means on a support mast, the device comprising:

~~a housing means that an average person can easily install to the support mast outer surface by means of a plurality of screws and located above the canopy opening and closing means;~~

~~a reversible electric motor and gear means driving a cable reel and mounted to the housing;~~

~~a length of cable having means to fix one end to the cable reel and means to fix the opposite end to the canopy opening and closing means;~~

a means to provide electricity;

a motor control having means to receive the electricity and a manual switch means and a remote control switch means that connect and disconnect the electricity to the motor and control the motor start and stop and direction of rotation and drive the cable reel to collect and dispense the cable to lift and lower and stop the canopy opening and closing means;

a transmitter having means to control the remote control switch;

1. (Previously Presented) ~~An electric opening and closing device that retrofits to new and existing patio umbrellas, the device comprising:~~ A retrofit electric opening and closing device that attaches to new and existing patio umbrellas, whereby the patio umbrellas have an opening

and closing means, whereby a person with ordinary skill can attach the device to the opening and closing means of the patio umbrellas with little or no modification, whereby the device drivingly engages the opening and closing means of the patio umbrellas, the device comprising:

A retrofit motor and control kit that provides a substitute means to open and close patio umbrellas, the patio umbrellas comprise a mast that is typically mounted in a vertical position by inserting the mast lower end through a hole in a table and secured in a base or other support means, the patio umbrellas further comprise a flexible canopy and a canopy opening means and a canopy closing means, the canopy is generally 4 feet and more in diameter and is affixed at its center to the mast upper end, the canopy can be stretched open to an umbrella shape at the mast upper end by the canopy opening means and can be closed around a portion of the mast by the canopy closing means, the canopy opening means and the canopy closing means comprise a plurality of ribs pivotally attached to the mast and to the canopy, the ribs are drivingly engaged by levers, the levers are drivingly engaged by a yoke that forms a ring applied on the circumference of the mast and movable along a portion of the mast length, the canopy opening means functions by manually hand lifting the yoke up the mast thereby driving the levers and the ribs and the canopy upward to an open position, the canopy is retained in an open position by inserting a pin or other means under the yoke through a hole or other means of the mast to prevent the yoke from moving downward under the weight of the canopy, the canopy closing means functions by removing the pin or other means from the mast and manually hand lowering the yoke down the mast so that the canopy weight and gravity force the yoke down the mast causing the levers and the ribs and the canopy to lower to a closed position, the retrofit motor and control kit that provides a substitute means to open and close patio umbrellas comprising:

a housing means;

a means to affix the housing to the patio umbrellas mast at a location where control of the yoke can be established;

a reversible electric motor, the motor comprises a brake means, and the motor is affixed to the housing;

a means to provide electricity;

a reel drivingly engaged with the motor, and when the electricity is applied to the motor the motor rotates the reel, and when the electricity is disconnected the motor and reel stop rotating, and the motor brake prevents the reel from rotating when the electricity is disconnected;

a housing means for the motor and the reel;

a length of cable affixable at one end to the reel whereby and at the opposite end of the cable is affixable to the patio umbrellas yoke opening and closing means, thereby the yoke is coupled to the cable and to the reel and to the motor and thereby the motor is drivingly engaged with the canopy opening means and the canopy closing means;

a means to affix the housing to the patio umbrella at a location to thereby establish control of the patio umbrella opening and closing means;

a switch having two means to connect the electricity to the motor, whereby the first means causes the motor to operate in a clockwise rotation the second means causes the motor to operate in a counter-clockwise rotation whereby the switch has additional means to disconnect the electricity to the motor to thereby cause the motor to stop operating;

a switch control having two means to connect and disconnect the electricity to the motor, and engagement of the first switch means connects the electricity to the motor and causes the motor to operate in a first direction of rotation causing the patio umbrellas to open yoke to move upward on the mast and thereby open the canopy whereby and subsequent disengagement of the first switch means disconnects the electricity to the motor to thereby cause the motor to stop operating and causing the patio umbrellas yoke to stop opening moving and thereby the canopy stops opening and the canopy is retained at its present position by the motor brake, and whereby engagement of the second switch means causes the motor to operate in a second direction of rotation causing the patio umbrellas to close yoke to move downward on the mast and the canopy weight and gravity cause the canopy to close whereby and subsequent disengagement of the second switch means disconnects the electricity to the motor to thereby cause the motor to stop operating and causing the patio umbrellas to stop closing yoke to stop moving and thereby the canopy stops closing and the canopy is retained at its present position by the motor brake,

thereby the motor and control kit substitutes for the function of manually hand lifting and lowering the yoke and controls the canopy opening means and the canopy closing means of patio umbrellas;

whereby the switch has additional means to disconnect the electricity to the motor to thereby cause the motor to stop operating;

a remote control receiver having two means to connect the electricity to the motor, whereby the first means causes the motor to operate in a clockwise rotation and the second means causes the motor to operate in a counter-clockwise rotation, whereby the receiver has additional means to disconnect the electricity to the motor to thereby cause the motor to stop operating;

a remote control receiver switch having two means to connect and disconnect the electricity to the motor, and engagement of the first receiver switch means connects the electricity to the motor and causes the motor to operate in a first direction of rotation causing the patio umbrellas to open yoke to move upward on the mast and thereby open the canopy whereby and subsequent disengagement of the first receiver switch means disconnects the electricity to the motor to thereby cause the motor to stop operating and causing the patio umbrellas yoke to stop opening moving and thereby the canopy stops opening and the canopy is retained at its present position by the motor brake, and whereby engagement of the second receiver switch means causes the motor to operate in a second direction of rotation causing the patio umbrellas to close yoke to move downward on the mast and the canopy weight and gravity cause the canopy to close whereby and subsequent disengagement of the second receiver switch means disconnects the electricity to the motor to thereby cause the motor to stop operating and causing the patio umbrellas to stop closing yoke to stop moving and thereby the canopy stops closing and the canopy is retained at its present position by the motor brake, thereby the motor and control kit substitutes for the function of manually hand lifting and lowering the yoke and controls the canopy opening means and the canopy closing means of patio umbrellas;

a remote control transmitter having means to control the remote control receiver switch.

2. (Canceled) A retrofit motor and control kit that provides a substitute means to open and close patio umbrellas, the patio umbrellas comprise a mast that is typically mounted in a vertical

position by inserting the mast lower end through a hole in a table and secured in a base or other support means, the patio umbrellas further comprise a flexible canopy and a canopy opening means and a canopy closing means, the canopy is generally 4 feet and more in diameter and is affixed at its center to the mast upper end, the canopy can be stretched open to an umbrella shape at the mast upper end by the canopy opening means and can be closed around a portion of the mast by the canopy closing means, the canopy opening means and the canopy closing means comprise a plurality of ribs pivotally attached to the mast and to the canopy, the ribs are drivingly engaged by levers, the levers are drivingly engaged by a yoke that forms a ring applied on the circumference of the mast and movable along a portion of the mast length, the canopy opening means and the canopy closing means are further comprised of one or more ropes attached at one end to the yoke whereby the opposite ends of the ropes pass over a pulley mounted above the yoke near the mast top and the ropes free ends hang down and can be grasped by hand, the canopy opening means functions by manually hand pulling the ropes free ends downward thus pulling the yoke up the mast thereby driving the levers and the ribs and the canopy upward to an open position, the canopy is retained in an open position by inserting a pin or other means under the yoke through a hole or other means of the mast or by tying the rope to the mast to prevent the yoke from moving downward under the weight of the canopy, the canopy closing means functions by removing the pin or other means from the mast or untying the ropes and manually hand raising the ropes free ends so that the canopy weight and gravity force the yoke down the mast causing the levers and the ribs and the canopy to lower to a closed position, the retrofit motor and control kit that provides a substitute means to open and close patio umbrellas comprising:

a housing means;

a means to affix the housing to the mast at a location where control of the yoke can be established;

a reversible electric motor, the motor comprises a brake means, and the motor is affixed to the housing;

a means to provide electricity;

a reel drivingly engaged with the motor, and when the electricity is applied to the motor the motor rotates the reel, and when the electricity is disconnected the motor and reel stop rotating, and the motor brake prevents the reel from rotating when the electricity is disconnected;

a length of cable affixable at one end to the reel and at the opposite end to the yoke thereby the yoke is coupled to the cable and to the reel and to the motor and thereby the motor is drivingly engaged with the canopy opening means and the canopy closing means;

a switch control having two means to connect and disconnect the electricity to the motor, and engagement of the first switch means connects the electricity to the motor and causes the motor to operate in a first direction of rotation causing the yoke to move upward on the mast and thereby open the canopy and subsequent disengagement of the first switch means disconnects the electricity to the motor to thereby cause the motor to stop operating and causing the yoke to stop moving and thereby the canopy stops opening and the canopy is retained at its present position by the motor brake, and engagement of the second switch means causes the motor to operate in a second direction of rotation causing the yoke to move downward on the mast and the canopy weight and gravity cause the canopy to close and subsequent disengagement of the second switch means disconnects the electricity to the motor to thereby cause the motor to stop operating and causing the yoke to stop moving and thereby the canopy stops closing and the canopy is retained at its present position by the motor brake, thereby the motor and control kit substitutes for the function of manually hand pulling and raising the ropes that operate the canopy opening means and the canopy closing means of patio umbrellas;

a remote control receiver switch having two means to connect and disconnect the electricity to the motor, and engagement of the first receiver switch means connects the electricity to the motor and causes the motor to operate in a first direction of rotation causing the canopy to open, and subsequent disengagement of the first receiver switch means disconnects the electricity to the motor to thereby cause the motor to stop operating and causing the canopy to stop opening and the canopy is retained at its present position by the motor brake, and engagement of the second receiver switch means causes the motor to operate in a second direction of rotation causing the yoke to move downward on the mast and the canopy weight and gravity cause the

canopy to close, and subsequent disengagement of the second receiver switch means disconnects the electricity to the motor to thereby cause the motor to stop operating and causing the canopy to stop closing and the canopy is retained at its present position by the motor brake, thereby the motor and control kit substitutes for the function of manually hand pulling and raising the ropes the operate the canopy opening means and the canopy closing means of patio umbrellas;

a remote control transmitter having means to control the remote control receiver switch.

3. (Canceled) A retrofit motor and control kit that provides a substitute means to open and close patio umbrellas, the patio umbrellas comprise a mast that is typically mounted in a vertical position by inserting the mast lower end through a hole in a table and secured in a base or other support means, the patio umbrellas further comprise a flexible canopy and a canopy opening means and a canopy closing means, the canopy is generally 4 feet and more in diameter and is affixed at its center to the mast upper end, the canopy can be stretched open to an umbrella shape at the mast upper end by the canopy opening means and can be closed around a portion of the mast by the canopy closing means, the canopy opening means and the canopy closing means comprise a plurality of ribs pivotally attached to the mast and to the canopy, the ribs are drivingly engaged by levers, the levers are drivingly engaged by a yoke that forms a ring applied on the circumference of the mast and movable along a portion of the mast length, the canopy opening means and the canopy closing means are further comprised of a hand operated crank mechanism attached to the mast lower midsection, the crank mechanism comprises a reel engaged with a crank handle and a reel brake and a cable affixed to the reel at one end whereby the cable passes over a pulley at the mast upper end and the opposite end of the cable is affixed to the yoke located below the pulley, the canopy opening means functions by hand operating the crank mechanism in a first direction of rotation to drive the cable to lift the yoke up a length of the mast thereby forcing the levers to drive the ribs upward to open the canopy, when hand operating the crank mechanism is terminated the canopy is retained at its present position by the reel brake that prevents the yoke from moving, the canopy closing means functions by hand operating the crank mechanism in a second direction of rotation to drive the cable to lower the yoke down a length of mast so that the canopy weight and gravity force the yoke down the mast causing the levers and the ribs and the canopy to lower to a closed position, when hand operating the crank mechanism is terminated the canopy is retained at its present position by the reel brake

that prevent the yoke from moving, the retrofit motor and control kit that provides a substitute means to open and close patio umbrellas comprising:

a housing means;

a means to affix the housing to the mast at a location where control of the yoke can be established;

a reversible electric motor, the motor comprises a brake means, and the motor is affixed to the housing;

a means to provide electricity;

a reel drivingly engaged with the motor, and when the electricity is applied to the motor the motor rotates the reel, and when the electricity is disconnected the motor and reel stop rotating, and the motor brake prevents the reel from rotating when the electricity is disconnected;

a length of cable affixable at one end to the reel and at the opposite end to the yoke thereby the yoke is coupled to the cable and to the reel and to the motor and thereby the motor is drivingly engaged with the canopy opening means and the canopy closing means;

a switch control having two means to connect and disconnect the electricity to the motor, and engagement of the first switch means connects the electricity to the motor and causes the motor to operate in a first direction of rotation causing the yoke to move upward on the mast and thereby open the canopy and subsequent disengagement of the first switch means disconnects the electricity to the motor to thereby cause the motor to stop operating and causing the yoke to stop moving and thereby the canopy stops opening and the canopy is retained at its present position by the motor brake, and engagement of the second switch means causes the motor to operate in a second direction of rotation causing the yoke to move downward on the mast and the canopy weight and gravity cause the canopy to close and subsequent disengagement of the second switch means disconnects the electricity to the motor to thereby cause the motor to stop operating and causing the yoke to stop moving and thereby the canopy stops closing and the canopy is retained at its present position by the motor brake, thereby the motor and control kit substitutes for the

function of manually hand cranking a mechanism to operate the canopy opening means and the canopy closing means of patio umbrellas;

a remote control receiver switch having two means to connect and disconnect the electricity to the motor, and engagement of the first receiver switch means connects the electricity to the motor and causes the motor to operate in a first direction of rotation causing the canopy to open, and subsequent disengagement of the first receiver switch means disconnects the electricity to the motor to thereby cause the motor to stop operating and causing the canopy to stop opening and the canopy is retained at its present position by the motor brake, and engagement of the second receiver switch means causes the motor to operate in a second direction of rotation causing the yoke to move downward on the mast and the canopy weight and gravity cause the canopy to close, and subsequent disengagement of the second receiver switch means disconnects the electricity to the motor to thereby cause the motor to stop operating and causing the canopy to stop closing and the canopy is retained at its present position by the motor brake, thereby the motor and control kit substitutes for the function of manually hand cranking a mechanism to operate the canopy opening means and the canopy closing means of patio umbrellas;

a remote control transmitter having means to control the remote control receiver switch.

1. (Original) An electric opening and closing device that retrofits to new and existing patio umbrellas, the device comprising:

a reversible electric motor;

a reel drivingly engaged with the motor;

a housing means for the motor and the reel;

a length of cable affixable at one end to the reel whereby the opposite end of the cable is affixable to the patio umbrella opening and closing means;

a means to affix the housing to the patio umbrella at a location to thereby establish control of the patio umbrella opening and closing means;

a means to provide electricity;

~~a switch having two means to connect the electricity to the motor, whereby the first means causes the motor to operate in a clockwise rotation and the second means causes the motor to operate in a counter-clockwise rotation, whereby the switch has additional means to disconnect the electricity to the motor to thereby cause the motor to stop operating;~~

~~a remote control receiver having two means to connect the electricity to the motor, whereby the first means causes the motor to operate in a clockwise rotation and the second means causes the motor to operate in a counter-clockwise rotation, whereby the receiver has additional means to disconnect the electricity to the motor to thereby cause the motor to stop operating;~~

~~a remote control transmitter having means to control the remote control receiver.~~